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| APPLICATION NO.                                                                                              | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO.            |
|--------------------------------------------------------------------------------------------------------------|-------------|----------------------|---------------------|-----------------------------|
| 10/619,413                                                                                                   | 07/16/2003  | Doron Handelman      |                     | 7367                        |
| 7590                                                                                                         | 08/11/2005  |                      |                     | EXAMINER<br>KANG, JULIANA K |
| Doron Handelman<br>c/o ANTHONY CASTORINA<br>SUITE 207<br>2001 JEFFERSON DAVIS HIGHWAY<br>ARLINGTON, VA 22202 |             |                      | ART UNIT<br>2874    | PAPER NUMBER                |
| DATE MAILED: 08/11/2005                                                                                      |             |                      |                     |                             |

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/619,413             | HANDELMAN, DORON    |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Juliana K. Kang        | 2874                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) Responsive to communication(s) filed on 19 May 2005.  
 2a) This action is **FINAL**.                            2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) Claim(s) 1-14, 26-31 and 37-52 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-14, 26-31 and 37-52 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_.  
 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.  
 5) Notice of Informal Patent Application (PTO-152)  
 6) Other: \_\_\_\_\_.

1. Applicant's communication filed on May 19, 2005 has been carefully studied by the Examiner. The arguments advanced therein, considered together with the amendments made to the claims, are persuasive and the objections and rejections based upon prior art made of record in the previous office action are withdrawn. In view of further search, however, and the consequent discovery of a previously uncited prior art document, a new rejection is applied to the pending claims. The late discovery of the newly applied reference is sincerely regretted. This action is **not** made final.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-14, 26-31 and 37-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kang et al (US 2002/0118441A1) and further in view of Johnson et al (U.S. Patent 6,636,337 B2).

Regarding claims 1-6, 9-14, 26-29, 37-52, Kang et al teach all-optical logic AND operation in a SOA-based Mach-Zehnder interferometer with nonlinear characteristics producing ON/OFF form of optical signals that are arranged in a rectangular arrangement (260 in Fig. 3) with some SOA arranged in parallelogram matrices (Fig. 1) and filter (300 see Fig. 3). However, Kang et al do not specifically teach a first and

second subsets of nonlinear elements. Kang et al teach that the unit logic device is crucial to the implementation of the optical computer, and can be used as the basic element of all-optical signal processing. An optical computer performs many different tasks that require many combinations of different logic functions and units. Johnson et al teach an optical information processing system using different logic operation including combination of AND logic operations that are in a rectangular arrangement (see Fig. 10). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the Kang et al's logic unit in various arrangements including in Johnson et al in order to perform a desired optical signal processing at very high speed.

Regarding claim 7, Kang et al show output signal and input signal that are traveling in opposite direction (fig. 1).

Regarding claim 8, Kang et al and Johnson et al do not teach a controller and driver interface operatively associated with the set of nonlinear elements. Using a controller and a driver interface in a system especially in an optical computer system requires some sort of controller and a driver interface in order to operate the system in an efficient manner. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use a controller and driver interface in Kang et al and Johnson et al to perform the system in an efficient manner.

### ***Response to Arguments***

4. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Guilfoyle et al (U.S. Patent 4,864,524) teach an optical computer apparatus with various logic operation combinations. Byun et al (U.S. Patent 6,804,047 B2) teach an all-optical OR gate using semiconductor optical amplifiers. Roberts et al (U.S. Patent 5,999,283) teach an optical logic device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juliana K. Kang whose telephone number is (571) 272-2348. The examiner can normally be reached on Mon. & Fri. 10:00-6:00 and Tue. & Thur. 10:00-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rod Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



JULIANA KANG  
PRIMARY EXAMINER